

Benthic Habitat Type Map Metadata (200704)

Identification_Information:

Citation:

Citation_Information:

Originator: Miles Anderson, Analytical Laboratories of Hawaii

Publication_Date: 20020524

Title: Benthic Habitat Type Maps of Hawaii Island 2000 - Prepared by Visual Interpretation from Remote Sensing Imagery Collected by NOAA

Edition: version 1.1

Geospatial_Data_Presentation_Form: PDF

Publication_Information:

Publication_Place: Kailua, Hawaii

Publisher: Analytical Laboratories of Hawaii

Online_Linkage:

http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/overview.htm

Larger_Work_Citation:

Citation_Information:

Originator: Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program

Publication_Date: 20020524

Title: Benthic Habitats of the Main Hawaiian Islands Prepared by Visual Interpretation from Remote Sensing Imagery Collected by NOAA Year 2000

Edition: version 1.1

Geospatial_Data_Presentation_Form: map

Publication_Information:

Publication_Place: Silver Spring, MD

Publisher: NOAA's Ocean Service, National Centers for Coastal Ocean Science (NCCOS)

Online_Linkage:

http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/overview.htm

Description:

Abstract: Twenty-one Habitat and Zome Maps. This project is a cooperative effort between the National Ocean Service, National Centers for Coastal Ocean Science, Center for Coastal Monitoring and Assessment, the University of Hawaii, and Analytical Laboratories of Hawaii, LLC. The goal of the work was to develop coral reef mapping methods and compare benthic habitat maps generated by photointerpreting georeferenced color aerial photography, hyperspectral and IKONOS satellite imagery.

Twenty-seven distinct benthic habitat types within eleven zones were mapped directly into a GIS system using visual interpretation of orthorectified aerial photographs and hyperspectral imagery. Benthic features were mapped that covered an area of 790 km². In all, 204 km² of unconsolidated sediment, 171 km² of submerged vegetation, and 415 km² of coral reef and colonized hardbottom were mapped.

Purpose: The National Ocean Service is conducting research to digitally map biotic resources and coordinate a long-term monitoring program that can detect and predict change in U.S. coral reefs, and their associated habitats and biological communities.

Time_Period_of_Content:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 2001

Ending_Date: 2002

Currentness_Reference: ground condition

Status:

Progress: Complete

Maintenance_and_Update_Frequency: None planned

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -156.0831

East_Bounding_Coordinate: -155.1592

North_Bounding_Coordinate: 20.3080

South_Bounding_Coordinate: 19.3347

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: coral reef

Theme_Keyword: coralline algae

Theme_Keyword: habitat

Theme_Keyword: color aerial photography

Theme_Keyword: AURORA hyperspectral imagery

Theme_Keyword: reef

Theme_Keyword: submerged aquatic vegetation

Theme_Keyword: unconsolidated sediments

Theme_Keyword: ocean

Theme:

Theme_Keyword_Thesaurus: CoRIS Discovery Thesaurus

Theme_Keyword: Map Images > Habitats

Theme:

Theme_Keyword_Thesaurus: CoRIS Theme Thesaurus

Theme_Keyword: Mapping > Habitat mapping

Theme_Keyword: Algae > Coralline algae

Theme_Keyword: EARTH SCIENCE > Biosphere > Vegetation > Algae > Coralline algae

Theme_Keyword: Remote sensing > Satellite (digital scans) > hyperspectral analysis

Theme_Keyword: EARTH SCIENCE > Biosphere > Zoology > Corals > Reef monitoring

and assessment > Remote sensing > Satellite (digital scans) > Hyperspectral analysis

Theme_Keyword: Remote sensing > Satellite (digital scans) > IKONOS

Theme_Keyword: EARTH SCIENCE > Biosphere > Zoology > Corals > Reef monitoring
and assessment > Remote sensing > Satellite (digital scans) > IKONOS

Theme_Keyword: Remote sensing > Aircraft > Aerial photography

Theme_Keyword: EARTH SCIENCE > Biosphere > Zoology > Corals > Reef monitoring
and assessment > Remote sensing > Aircraft > Aerial photography

Theme_Keyword: Coral reef > Coral reef monitoring and assessment > Remote sensing

Theme_Keyword: EARTH SCIENCE > Biosphere > Zoology > Corals > Reef monitoring
and assessment > Remote sensing

Theme:

Theme_Keyword_Thesaurus: ISO 19115:2003 MD_TopicCategoryCode

Theme_Keyword: imageryBaseMapsEarthCover

Theme_Keyword: 010

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: United States

Place_Keyword: Hawaii

Place_Keyword: Island of Hawaii

Place:

Place_Keyword_Thesaurus: CoRIS Place Thesaurus

Place_Keyword: OCEAN BASIN > Pacific Ocean > Central Pacific Ocean > Hawaiian
Islands > Hawaii Island > Hawaii Island (19N155W0003)

Place_Keyword: COUNTRY/TERRITORY > United States of America > Hawaii > Hawaii >
Hawaii Island (19N155W0003)

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: Island of Hawaii

Access_Constraints: None

Use_Constraints: Not for navigation

Point_of_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program

Contact_Position: Biogeography Team Leader, Mapping Manager

Contact_Address:

Address_Type: mailing and physical address

Address: 1305 East West Highway

City: Silver Spring

State_or_Province: MD

Postal_Code: 20910

Contact_Voice_Telephone: 301-713-3028

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Contact_Electronic_Mail_Address: steve.rohmann@noaa.gov

Native_Data_Set_Environment: Microsoft Windows 2000 Version 5.0 (Build 2195) Service Pack 3; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report: The purpose of this study was to determine the relative accuracy of maps generated from the photointerpretation of three sources of remotely sensed imagery. Four test areas were identified based on the diversity of the habitat types and to ensure that all benthic habitat types throughout the Hawaiian Islands were represented. A random stratified sampling method was implemented to select field sites to test the map accuracy. Each site was navigated to using a Trimble Geo Explorer 3 GPS data logger, and positional data was acquired.

The three types of imagery were acquired during different days with different weather conditions. The habitat type for the portions of the test area that were not interpretable due to cloud cover, glint or water quality were classified as unknown. The accuracy assessment points that fell within polygons with the habitat type of unknown were not included in the accuracy analysis. As a result, the total number of accuracy assessment points varies between the imagery types within a single area.

Two statistical analyses (Kappa and Tau test and the Z score) were performed. The Kappa and Tau statistic for the major habitat types showed that the percent overall accuracy of photointerpretation of color aerial photography, IKONOS satellite and hyperspectral imagery is 90.7%, 86.5% and 89% respectively. The Z score showed that at the 90% confidence level there was no significant difference between data gathered from the three imagery sources. At the 95% confidence level there is a significant difference in the quality between aerial photographs and IKONOS satellite imagery.

The accuracy assessments tests showed that the ability to generate benthic habitat maps with an overall accuracy of 90% at the 95% confidence interval is reaching a threshold using imagery with three meter pixel size allowing for spectral enhancement of the imagery with reduced resolution.

Logical_Consistency_Report: All three types of remotely sensed imagery were processed by NOS prior to map production. Individual color aerial photographs were georeferenced and mosaicked. The hyperspectral data composed of 72 ten nm wide bands were subsetted to three band composites that enhanced deep and shallow water features. IKONOS satellite

imagery was corrected for atmospheric and water column effects. During the digitizing process, image stretches and manipulating image contrast, brightness and color balance were performed in the ArcView Image Analysis Extension to enhance features in the processed imagery.

GIS topologic quality was established by executing ArcView extension routines that check for: overlapping polygons, multipart polygons, sliver polygons and void polygons. Additionally checks for adjacent polygons with the same habitat attributes were completed. All errors were identified and corrected. This file is believed to be logically consistent.

Completeness_Report: NOAA supplied georeferenced imagery to Analytical Laboratories of Hawaii. Delineation of all habitat boundaries was conducted with the image scale at 1:6,000. This ensures that the level of detail produced by the photointerpreter is uniform throughout the project. Also, NOAA has shown from similar mapping efforts in the Caribbean and Florida Keys, that little additional information is gained from having the image at a smaller scale and the labor intensity increased significantly.

The minimum mapping unit (MMU) for identifying habitats or features was 1 acre for visual photointerpretation. The software utilized in this project was designed to alert the photointerpreter each time a polygon was drawn smaller than the MMU. When this occurred the photointerpreter has the choice whether to include the polygon in the data set.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report: RMS from digitized output was determined using the ESRI RMEer2 extension and shown to be less than 1m when conducted at 1:6000 scale.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Originator: M.S. Coyne

Publication_Date: 2002

Title: Classification Scheme for Benthic Habitats: Main Eight Hawaiian Islands

Geospatial_Data_Presentation_Form: document

Publication_Information:

Publication_Place: Silver Spring, MD

Publisher: NOAA's Ocean Service, National Centers for Coastal Ocean Science

(NCCOS)

Type_of_Source_Media: Report

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2002

Source_Currentness_Reference: publication date

Source_Citation_Abbreviation: Classification Scheme for Benthic Habitats: Hawaii

Source_Contribution: This document identified the zone and habitat types attributed in the data set

Source_Information:

Source_Citation:

Citation_Information:

Originator: Ken Buja

Publication_Date: 2002

Title: Coral Reef Digitizing Extension

Publication_Information:

Publication_Place: Silver Spring, MD

Publisher: NOAA's Ocean Service (NOS), National Centers for Coastal Ocean Science

(NCCOS)

Online_Linkage: <http://biogeo.nos.noaa.gov/products/apps/digitizer/>
Type_of_Source_Media: computer program
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 2002
Source_Currentness_Reference: publication date
Source_Citation_Abbreviation: Habitat Digitizer
Source_Contribution: This ArcView extension was used to digitize and attribute benthic zones and habitats for the eight main Hawaiian Islands.

Source_Information:
Source_Citation:
Citation_Information:
Originator: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS)
Publication_Date: 2000
Title: Color Aerial Photography
Geospatial_Data_Presentation_Form: remote-sensing image
Publication_Information:
Publication_Place: Silver Spring, MD
Publisher: NOAA's Ocean Service, National Centers for Coastal Ocean Science (NCCOS)
Other_Citation_Details: These photographs (scanned to a 1 meter pixel size) were mosaicked and georeferenced by Greenhorne & O'Mara, Inc. (Greenbelt, MD).

Online_Linkage: <http://biogeo.nos.noaa.gov/products/data/photos/hawaii.shtml>
Source_Scale_Denominator: 24000
Type_of_Source_Media: CD-ROM
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 2000
Source_Currentness_Reference: ground condition
Source_Citation_Abbreviation: geo-referenced orthophotographs
Source_Contribution: Used to identify and digitize benthic habitats for the eight main Hawaiian Islands.

Source_Information:
Source_Citation:
Citation_Information:
Originator: Advanced Power Technologies Inc.
Publication_Date: 2000
Title: AURORA Hyperspectral Imagery
Geospatial_Data_Presentation_Form: remote-sensing image
Publication_Information:
Publication_Place: Washington D.C.
Publisher: Advanced Power Technologies, Inc.
Other_Citation_Details: These data composed of 72 ten nm wide bands were processed to a 3 meter pixel size.

Type_of_Source_Media: CD-ROM
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 2000
Source_Currentness_Reference: ground condition
Source_Citation_Abbreviation: hyperspectral imagery
Source_Contribution: Used to identify and digitize benthic habitats for the eight main Hawaiian Islands.

Source_Information:

Source_Citation:

Citation_Information:

Originator: Space Imaging Inc.

Publication_Date: 2000

Title: IKONOS Satellite Imagery

Geospatial_Data_Presentation_Form: remote-sensing image

Publication_Information:

Publication_Place: Thornton, CO

Publisher: Space Imaging Inc.

Other_Citation_Details: This imagery was obtained at a 4 m pixel resolution and corrected for water atmospheric and water column effects.

Online_Linkage: www.spaceimaging.com

Type_of_Source_Media: CD-ROM

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2000

Source_Currentness_Reference: ground condition

Source_Citation_Abbreviation: IKONOS imagery

Source_Contribution: Used to identify and digitize benthic habitats for the eight main Hawaiian Islands.

Process_Step:

Process_Description: Benthic habitat maps were digitized by delineating habitat boundaries from georeferenced imagery loaded into ArcView 3.2 GIS software with the Image Analysis and NOAA Coral Reef Habitat Digitizing extensions both activated. Digitizing was conducted using heads-up computer screen methods with the minimum mapping unit (MMU) set to 1 acre and the image scale at 1:6,000.

All three types of remotely sensed imagery were processed by NOS prior to map production. Individual color aerial photographs were georeferenced and mosaicked. The hyperspectral data composed of 72 ten nm wide bands were subsetted to three band composites that enhanced deep and shallow water features. IKONOS satellite imagery was corrected for atmospheric and water column effects. During the digitizing process, image stretched and manipulating image contrast, brightness and color balance were performed in the ArcView Image Analysis Extension to enhance features in the processed imagery.

A first draft map was completed and features in the imagery where uncertainties existed, due to confusing or difficult to interpret signatures, were identified for future ground validation effort. An ArcView GIS point theme was generated with points positioned on the features of uncertain habitat type or along transects through gradients between habitat types. The GIS points were converted to GPS waypoints using Trimble Pathfinder Software and were navigated to in the field using a Trimble GeoExplorer 3 GPS data logger.

A benthic habitat characterization was conducted at each site by snorkeling, free diving, or via observations from the surface where water depth and clarity permitted. GPS data were collected at each location and site ID, depth, habitat type, zone and the method used to make the assessment were recorded. The ground validation data were incorporated into the second draft of each map.

Process_Date: 20011010

Process_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: Analytical Laboratories of Hawaii, LLC

Contact_Person: Miles Anderson

Contact_Position: Principal Investigator

Contact_Address:

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Address: 1320 Aalapapa Drive

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State_or_Province: Hawaii

Postal_Code: 96734

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Contact_Facsimile_Telephone: 808-262-7027

Contact_Electronic_Mail_Address: miles@interpac.net

Hours_of_Service: 0800 - 1700, Monday to Friday, HST

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Planar:

Grid_Coordinate_System:

Grid_Coordinate_System_Name: Universal Transverse Mercator

Universal_Transverse_Mercator:

UTM_Zone_Number: 5

Transverse_Mercator:

Scale_Factor_at_Central_Meridian: 0.999600

Longitude_of_Central_Meridian: -153.000000

Latitude_of_Projection_Origin: 0.000000

False_Easting: 500000.000000

False_Northing: 0.000000

Planar_Coordinate_Information:

Planar_Coordinate_Encoding_Method: Coordinate Pair

Coordinate_Representation:

Abscissa_Resolution: 5

Ordinate_Resolution: 5

Planar_Distance_Units: meters

Geodetic_Model:

Horizontal_Datum_Name: North American Datum of 1983

Ellipsoid_Name: Geodetic Reference System 80

Semi-major_Axis: 6378137.0000000

Denominator_of_Flattening_Ratio: 298.26

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: Hawaii.dbf

Entity_Type_Definition: Shapefile Attribute Table

Entity_Type_Definition_Source: None

Attribute:

Attribute_Label: PolygonID

Attribute_Definition: Unique ID for each GIS Polygon

Attribute_Definition_Source: Incremental Value

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 1

Range_Domain_Maximum: 954

Attribute:

Attribute_Label: Acres

Attribute_Definition: Area of each polygon in acres

Attribute_Definition_Source: GIS software calculation

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 1.005

Range_Domain_Maximum: 29463.34

Attribute:

Attribute_Label: Id

Attribute_Definition: ID assigned to each detailed habitat type

Attribute_Definition_Source: Benthic Habitats of the Main Hawaiian Islands

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: 11

Enumerated_Domain_Value_Definition: Unconsolidated Sediment/Sand

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 12

Enumerated_Domain_Value_Definition: Unconsolidated Sediment/Mud

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 32

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Linear Reef

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 33

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Spur and Groove

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 34

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Individual Patch Reef

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 35

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Aggregated Patch Reef

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 37

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Aggregated Coral

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 38

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Scattered Coral/ Rock in Unconsolidated Sediment

Enumerated_Domain_Value_Definition_Source: User Defined

Enumerated_Domain:

Enumerated_Domain_Value: 39

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Colonized Pavement

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 41

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized

Hardbottom/Colonized Volcanic Rock/Boulder

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 42

Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Colonized
 Hardbottom/Colonized Pavement with Sand Channels
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 45
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Encrusting
 Coralline Algae/50%- less than 90%
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 46
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Encrusting
 Coralline Algae/10%- less than 50%
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 47
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Encrusting
 Coralline Algae/90%- less than 100%
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 61
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Uncolonized
 Hardbottom/Uncolonized Pavement
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 62
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Uncolonized
 Hardbottom/Reef Rubble
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 64
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Uncolonized
 Hardbottom/Uncolonized Volcanic Rock/Boulder
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 65
 Enumerated_Domain_Value_Definition: Coral Reef and Hardbottom/Uncolonized
 Hardbottom/Uncolonized Pavement with Sand Channels
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 71
 Enumerated_Domain_Value_Definition: Other Delineations/Land
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 79
 Enumerated_Domain_Value_Definition: Other Delineations/Unknown
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 100
 Enumerated_Domain_Value_Definition: Other Delineations/Artificial/Other Man Made
 Features
 Enumerated_Domain_Value_Definition_Source: User defined
 Enumerated_Domain:
 Enumerated_Domain_Value: 101
 Enumerated_Domain_Value_Definition: Other Delineations/Artificial/Hardened
 Substrate
 Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 102

Enumerated_Domain_Value_Definition: Other Delineations/Artificial/Fish Ponds

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 103

Enumerated_Domain_Value_Definition: Other Delineations/Artificial/Emergent

Vegetation

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 211

Enumerated_Domain_Value_Definition: Submerged Vegetation/Seagrass/90%-100%

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 2121

Enumerated_Domain_Value_Definition: Submerged Vegetation/Seagrass/10%- less than 50%

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 2124

Enumerated_Domain_Value_Definition: Submerged Vegetation/Seagrass/50%- less than 90%

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 2211

Enumerated_Domain_Value_Definition: Submerged Vegetation/Macroalgae/90%- 100%

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 22121

Enumerated_Domain_Value_Definition: Submerged Vegetation/Macroalgae/10%- less than 50%

Enumerated_Domain_Value_Definition_Source: User defined

Enumerated_Domain:

Enumerated_Domain_Value: 22122

Enumerated_Domain_Value_Definition: Submerged Vegetation/Macroalgae/50%- less than 90%

Enumerated_Domain_Value_Definition_Source: User defined

Attribute:

Attribute_Label: Descriptor

Attribute_Definition: Field containing concatenated habitat data

Attribute_Definition_Source: Benthic Habitats of the Main Hawaiian Islands

Attribute_Domain_Values:

Unrepresentable_Domain: Concatenated field of detailed habitats from ArcView GIS software

Attribute:

Attribute_Label: Zone

Attribute_Definition: Name of benthic zone for each GIS polygon

Attribute_Definition_Source: Benthic Habitats of the Main Hawaiian Islands

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Attribute:

Attribute_Label: Habitat

Attribute_Definition: Name of benthic habitat for each GIS polygon

Attribute_Definition_Source: Benthic Habitats of the Main Hawaiian Islands

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Attribute:

Attribute_Label: Type

Attribute_Definition: Subset of habitat

Attribute_Definition_Source: ArcView Habitat Digitizer Extension

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Attribute:

Attribute_Label: Modifier1

Attribute_Definition: Subset of type

Attribute_Definition_Source: ArcView Habitat Digitizer Extension

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Attribute:

Attribute_Label: Modifier2

Attribute_Definition: Subset of Modifier1

Attribute_Definition_Source: ArcView Habitat Digitizer Extension

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Attribute:

Attribute_Label: Modifier3

Attribute_Definition: Subset of Modifier2

Attribute_Definition_Source: ArcView Habitat Digitizer Extension

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Attribute:

Attribute_Label: Representa

Attribute_Definition: Characteristic Species found in each GIS polygon

Attribute_Definition_Source: Benthic Habitats of the Main Hawaiian Islands

Attribute_Domain_Values:

Unrepresentable_Domain: Character Field

Distribution_Information:

Distributor:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program

Contact_Position: Biogeography Team Leader, Mapping Manager

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Address_Type: mailing and physical address

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City: Silver Spring

State_or_Province: MD

Postal_Code: 20910

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Contact_Facsimile_Telephone: 301-713-4388

Contact_Electronic_Mail_Address: steve.rohmann@noaa.gov

Resource_Description: Main Hawaii Islands CD and Atlas Habitat Products

Distribution_Liability: The National Oceanic and Atmospheric Administration (NOAA) National Centers for Coastal Ocean Science (NCCOS) produced this data CD-ROM. NCCOS Biogeography Program does not guarantee the accuracy of the geographic features or attributes. Please see the metadata records for each data set for complete information on the source, limitations, and proper use.

Disclaimer- While every effort has been made to ensure that these data are accurate and reliable within the limits of the current state of

the art, NOAA cannot assume liability for any damages caused by any errors or omissions in the data, nor as a result of the failure of the data to function on a particular system. NOAA makes no warranty, expressed or implied, nor does the fact of distribution constitute such a warranty.

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Format_Name: PDF

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Network_Resource_Name:

http://ccma.nos.noaa.gov/products/biogeography/hawaii_cd/htm/maps.htm

Fees: None

Metadata_Reference_Information:

Metadata_Date: 20060103

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Monitoring and Assessment (CCMA), Biogeography Program

Contact_Position: Biogeography Team Leader, Mapping Manager

Contact_Address:

Address_Type: mailing and physical address

Address: 1305 East West Highway

City: Silver Spring

State_or_Province: MD

Postal_Code: 20910

Contact_Voice_Telephone: 301-713-3028

Contact_Facsimile_Telephone: 301-713-4388

Contact_Electronic_Mail_Address: steve.rohmann@noaa.gov

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: Local Time